



AMATEUR RADIO AND EMERGENCY SERVICE

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WA State RACES Officer



AMATEUR RADIO AND EMERGENCY SERVICE

- What is Amateur Radio?
- What is ARES, RACES and ACS?
- ARES/RACES in Washington
- ARES/RACES - Capabilities
- ARES/RACES - How We Can Help
- What you'll need for a station



AMATEUR RADIO AND EMERGENCY SERVICE

- What is Amateur (HAM) Radio?
 - Primarily a hobby for individuals interested in electronics, and communicating with others via radio
 - Amateur Radio Operators are licensed by the FCC after passing examinations which include government regulations and radio theory
 - 3 classes of amateur licenses each granting greater levels of privileges
 - You can now get a HAM license without learning the Morse code



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- Why does the amateur radio service exist?

From the FCC rules and regulations Part 97.1

- (a). **Recognition and enhancement of the value of the amateur service to the public as a voluntary non-commercial communication service, particularly with respect to providing emergency communications.**
- (b) ...advancement of the radio art
- (c) ...advancing skills in both communications and technical phases of the art
- (d) ... reservoir...of **trained operators**, technicians, and electronics experts



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- What is ARES?
 - An organization of Amateur Radio Operators established in 1935 to provide communities with additional communications resources during times of emergency or disaster
 - Nationwide organization managed at the Section and county level
 - Members have registered their willingness to commit their time and equipment to support their community



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- What is ARES
 - All volunteer organization
 - No cost to the community
 - FCC regulations specifically prohibit any form of remuneration
 - Has some limitations:
 - Availability of members during normal working hours
 - Availability of members for extended operations
 - Not all members are equipped and trained for all modes of operation
 - Decentralized



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- ARES in Washington State
 - 1600 Members
 - Most members are also RACES certified (registered with the state)
 - 9 Districts & Medical



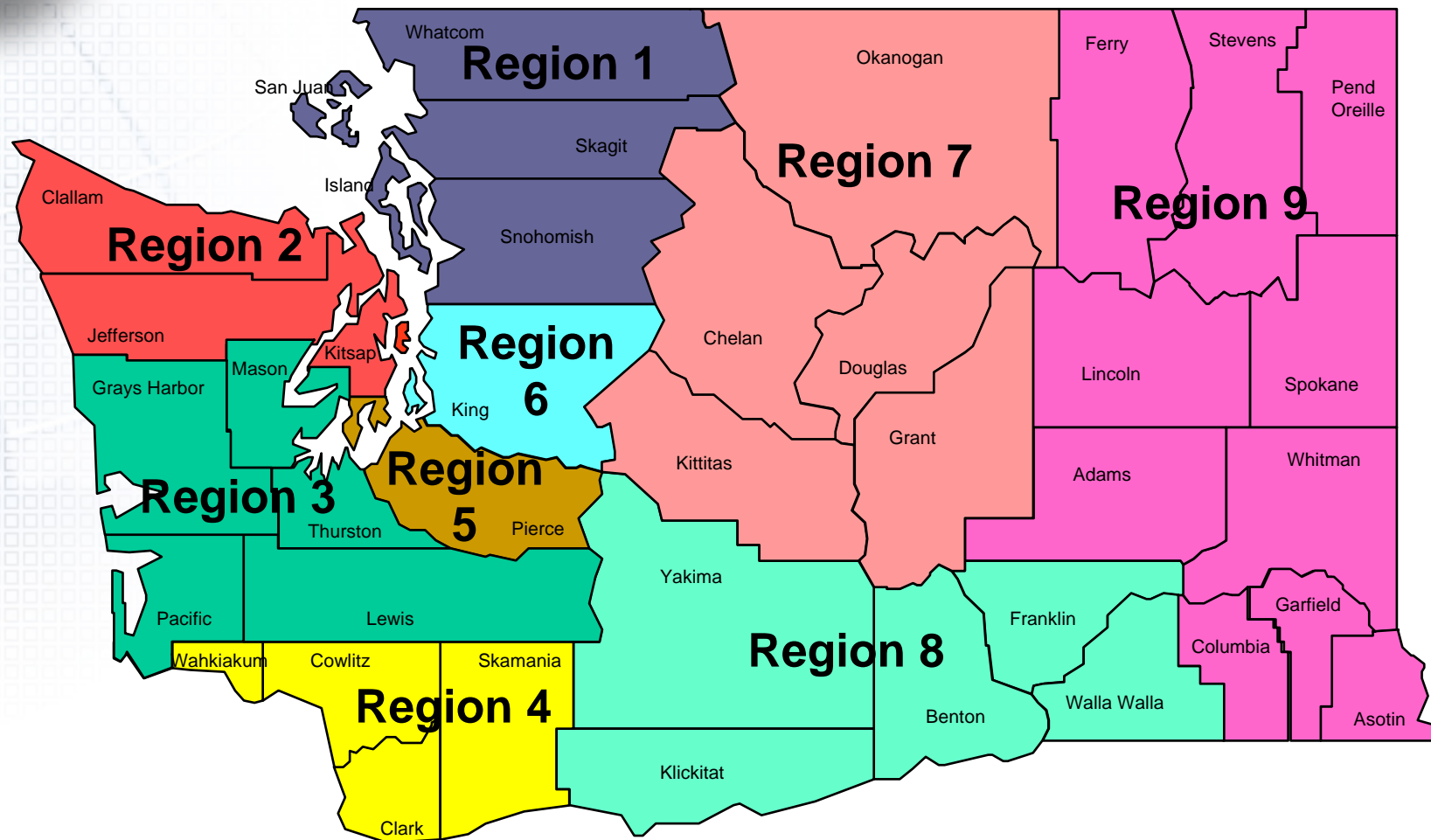
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- RACES
 - Grew out of the CD program in 1954
 - FCC regulated
 - FEMA sponsored but administered at the state/local level
 - Registered with the State as Emergency Workers
 - Most members are also ARES members
 - Same limitations as ARES
 - 9 Regions & State Emergency Mgmt. Div.



Regional Homeland Security Coordination Districts (RHSCD)¹



¹Note: These coincide with Local Health Regions for Bioterrorism Planning & Coordination
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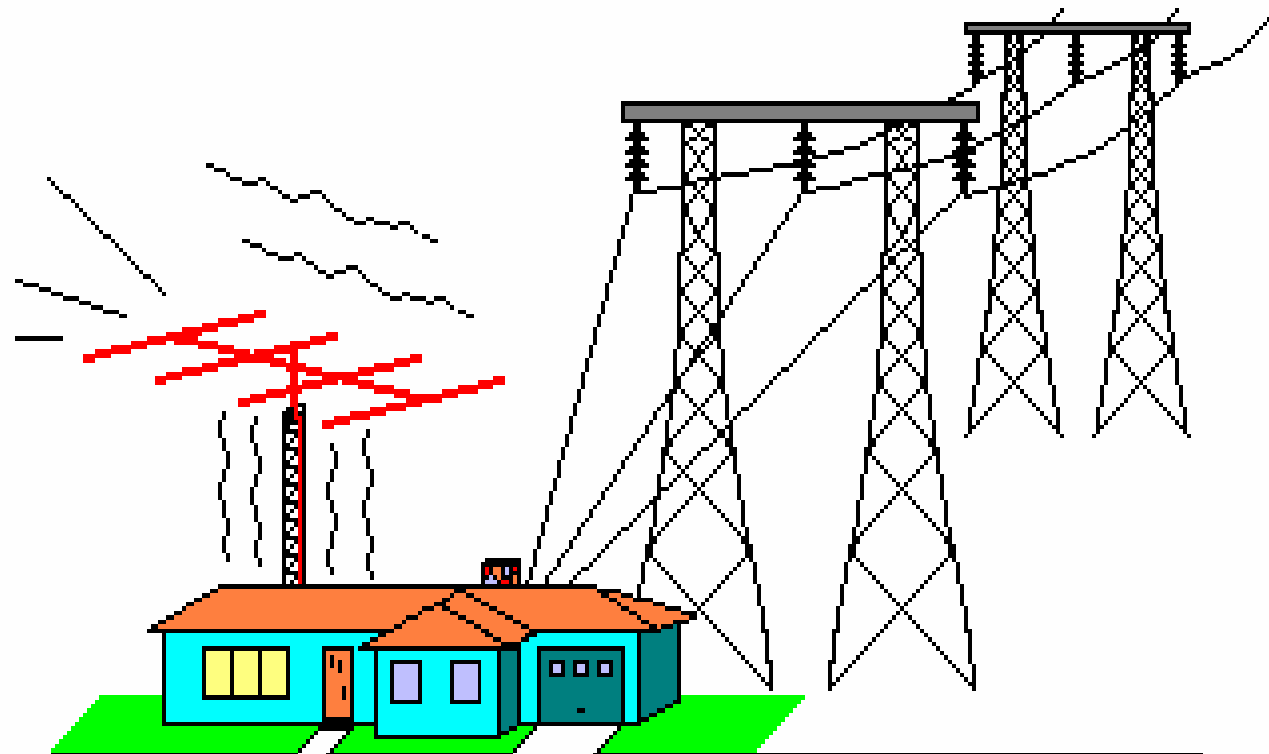
RACES Regions

- **Established to facilitate/control message flow to the State EOC and within each region**
- **Established to facilitate coordination of amateur radio resources (personnel/equipment)**
- **Nine regions – similar to the Health Regions**
- **ARES Districts align with the regions**



ARES/RACES Capabilities

- **Can operate on battery and generator power**
- **Provide voice and digital communications**
- **Provide communications from "difficult" locations**
 - **Hundreds of simplex “point to point” frequencies available**



YES, I HAVE ADDED SOME POWER. WHY DO YOU ASK??



ARES/RACES/ACS

- Rules of engagement
- Regulations
 - Emergency workers
- Why ACS (Auxiliary Communications System)
 - Home rule
- The WA State RACES Plan



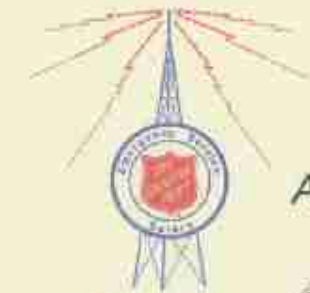
Emergency Communication Training



Congratulations

Edward Bruette, N7NVP

*has successfully completed Level 1 of the
ARRL Amateur Radio Emergency Communications Course.*



ARRL The national association for
AMATEUR RADIO

David Sumner **K1ZZ**
Executive Vice President

Mar 15, 2001
Date



ARES/RACES

Support Options

- EOC Support/ Resource Management
- Shelter & Hospital
- Search and Rescue Support
- Logistic Traffic
- Skywarn/Floodwatch/ Weather Information
- Portable Communications Systems
- Digital Data
- Digital Tracking
- Amateur Television



ARES/RACES

Support Options

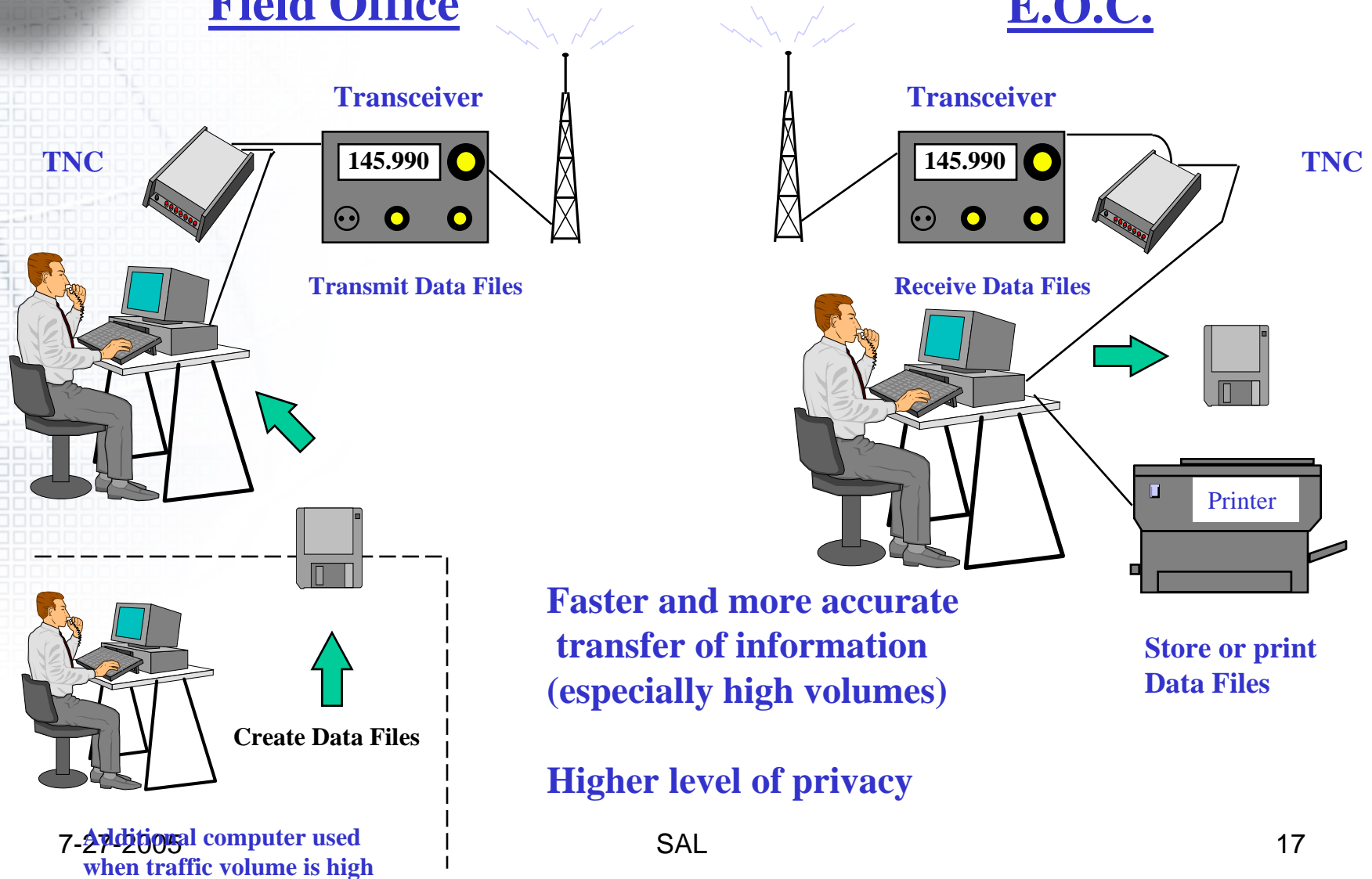
- Digital communications via radio - Computer to Computer
 - Faster and more accurate for large volumes of data
 - Information received in printed format (Hard Copy)
 - No need for the receiving station to write out the message by hand
 - Higher level of privacy than voice channels
 - Not easily monitored by the casual listener with a scanner



DATA COMMUNICATIONS VIA AMATEUR RADIO PACKET

Field Office

E.O.C.





ARES/RACES

Support Options

- **Television**
 - Provides live video info on wildland fires, spills, etc.
 - Allows the Incident Commander to actually see what's happening first hand (from the comfort of the Command Post)

2.4GHZ ATV (FM) Transmitter
and ICOM R3 Receiver
Helmet SARCAM





Mobile ATV (FSTV) EMC0MM System with
X-band repeat on 70cm/23cm/13cm/33cm



ARES/RACES

Support Options

- **APRS - Automatic Position Reporting System**
 - Station location displayed on a map
 - Moving objects can be tracked
 - Vehicles, Personnel, Weather, etc.



?





Emergency/Public Service

- State EOC, Camp Murray
 - County EOC's
 - Command Posts
 - Shelters
- In the field



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Emergency/Public Service

- Event Support:
 - Bike Tours
 - Walks
- Shadow Officials
- Rest Stops
- SAG Wagons
- Medical Teams



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Field Day

- 4th Weekend in June
- 24 Hour Emergency Exercise
- Totally off the “grid”

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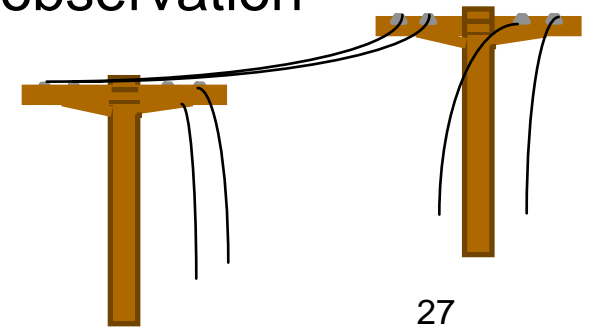
- ARES Mutual aid agreements include:
 - FEMA
 - Association of Public-Safety Communications Officials (APCO)
 - National Communications System (NCS)
 - American Red Cross (ARC)
 - Salvation Army
 - National Weather Service (NWS)
 - Civil Air Patrol (CAP)





ARES/RACES

- How can ARES/RACES assist you?
 - By providing additional communication capabilities during:
 - Wide area power outages
 - Wide area telephone outages
 - Restricted travel – natural or manmade
 - The need to augment large manpower incidents with additional communications or observation points





ARES/RACES

- How can ARES/RACES assist you?
 - By providing additional communication capabilities when:
 - Existing channels are overloaded
 - Trunked radio systems WILL saturate!
 - Cellular telephone systems WILL saturate!
 - Land line telephone networks WILL saturate!
 - Inter-agency communications are not possible
 - Incompatible frequencies or equipment
 - *Communications are the first to go...*

All circuits are busy -
Please try your call later





Are You a Licensed Amateur Radio Operator?



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Finding Operators

- Look within your staff
- Ask retired staff
- Coordinate with local DEM



Equipment Options

- VHF/UHF
 - Line of sight
 - Small antenna
 - Range increased by repeaters



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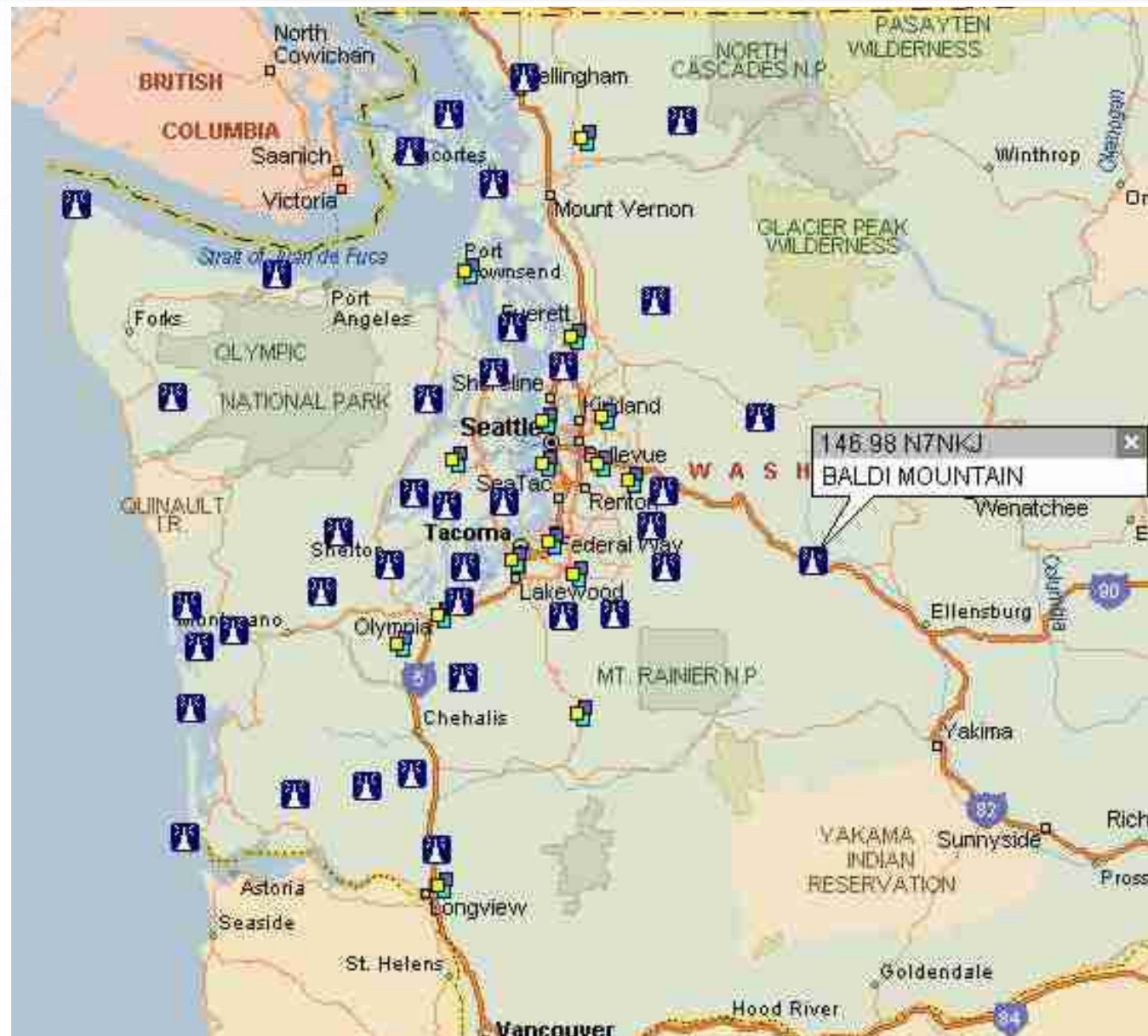


VHF/UHF Station Costs

- Radio – \$440
 - Power supply – \$100
 - Antenna – \$170
 - Feed line - \$0.80/Ft
 - Total - \$710+
-
- All costs approximate & do not include incidentals



VHF Repeater Map of WWA



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Line of Sight!



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Equipment Options

- HF
 - Long range – cross state
 - May not be needed
 - Requires a fairly large antenna



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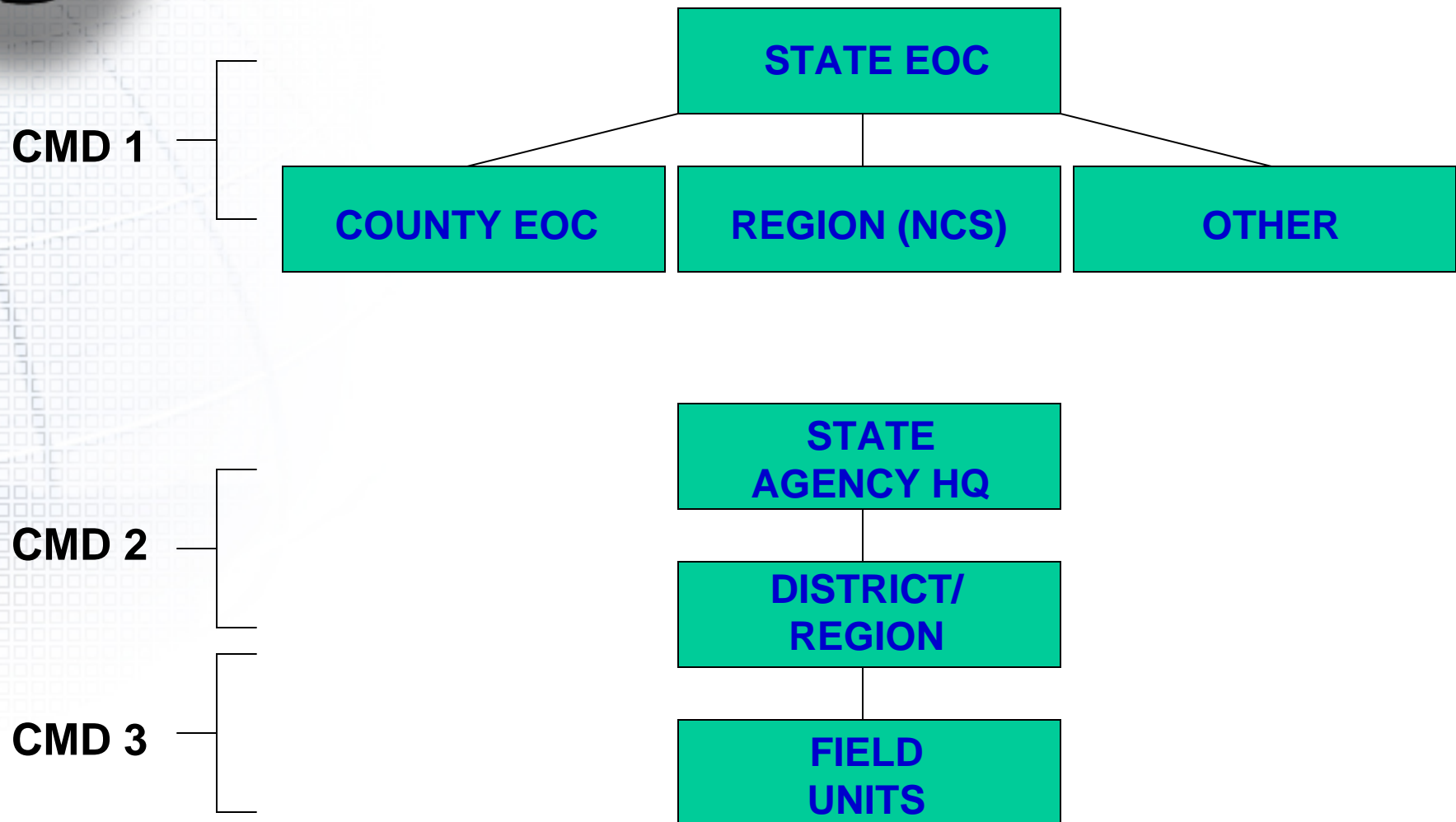


HF Station Costs

- Radio - \$1000
 - Tuner - \$300
 - Power supply - \$150
 - Antenna - \$100
 - Feed line - \$0.80/ft
 - Total - \$1550+
-
- All costs approximate & do not include incidentals

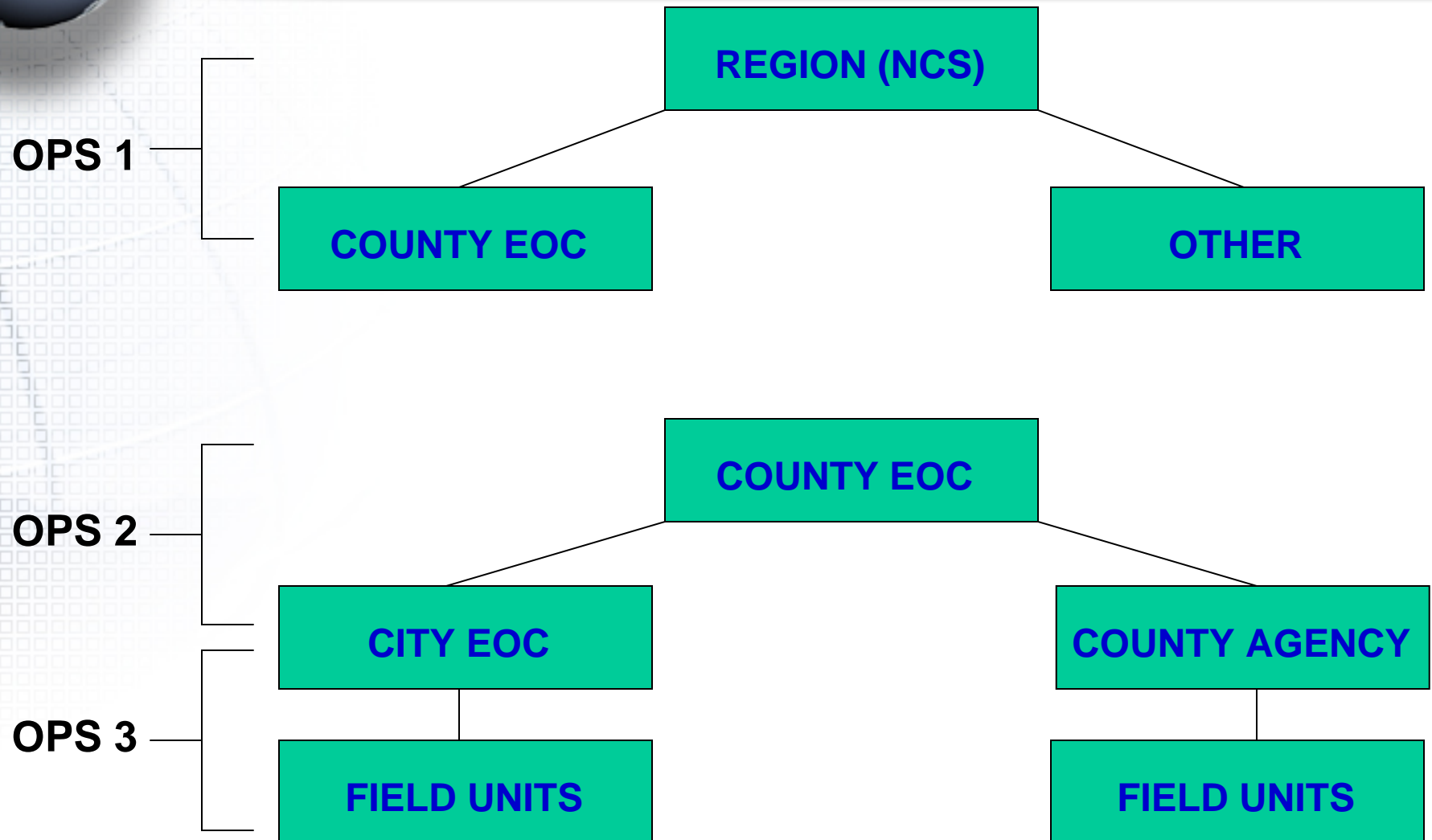


State Level Networks





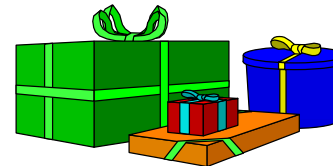
Local Level Networks





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- Questions?
- Wrap-up





Planning & Working Together

- Familiarity with locations, local agencies, equipment, computer programs
- Tabletop scenarios
- Functional communication drills
- Full-scale exercises



Working Conditions?





One Used Yaesu FT-101EE Transceiver	\$350.00
33' of #14 awg Antenna Wire	\$2.64
Two 1 1/4" Green Ceramic Insulators	\$1.00
100' of RG-213 Coax Cable.....	\$37.00
One 8' Copper Clad Ground Rod with Clamp and Strap ...	\$15.00

Realizing You Don't Need The Internet To
Communicate Around The World

PRICELESS!!

When All Else Fails There Is Amateur Radio

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Come Visit Our Shack





Further Information

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